3.3.2.2 Oak Barrens

3.3.2.2.1 Community Overview

Black oak is often the dominant tree in this fire-adapted savanna community of xeric sites, but white oak, bur oak, northern pin oak, and occasionally red oak, may also be present. Common understory species include lead plant, black-eyed susan, round-headed bush-clover, goats rue, june grass, little bluestem, flowering spurge, frostweed, false Solomon's-seal, spiderwort, and wild lupine. Some of the oak barrens remnants also contain patches of heath-like vegetation in addition to the prairie understory, with bracken fern, blueberries (*Vaccinium angustifolium* and *V. myrtilloides*), bearberry, and sweet fern locally common or even dominant. Distribution of this community is mostly in southwestern, central and west central Wisconsin.

The pine barrens and oak barrens communities described by Curtis (1959) share many similarities. In general, prairie species are better represented in the more oak-dominated barrens to the south, and pines and some of their characteristic associates are more prominent in the north. However, jack pine is an important component of some of Wisconsin's southernmost barrens occurrences (e.g., Gotham Jack Pines on the Wisconsin River in Richland County), and both red pine savanna and jack pine barrens were described in the Public Land Survey notes for Juneau County. Frequent fires can reduce the oaks to short, multi-stemmed "grubs", and result in the elimination of scattered large oaks that were formerly important in and characteristic of some areas.

Barrens communities occur on several landforms, especially outwash plains, lakeplains, and on the broad sandy terraces that flank some of the major rivers of southern Wisconsin. Soils are usually excessively well-drained sands, though thin-soiled, droughty sites over bedrock can also support this community. Similar communities include pine barrens, oak openings (drier sites), sand prairie, southern dry forest, Central Sands pine - oak forest, and bedrock glade.

3.3.2.2.2 Vertebrate Species of Greatest Conservation Need Associated with Oak Barrens

Twenty-eight vertebrate Species of Greatest Conservation Need were identified as moderately or significantly associated with oak barrens (Table 3-72).

Table 3-72. Vertebrate Species of Greatest Conservation Need that are (or historically were) moderately or significantly associated with oak barrens communities.

Species Significantly Associated with Oak Barrens
Birds
Sharp-tailed Grouse
Brown Thrasher
Vesper Sparrow
Lark Sparrow
Herptiles
Wood Turtle
Blanding's Turtle
Western Slender Glass Lizard
Northern Prairie Skink
Prairie Racerunner
Bullsnake
Eastern Massasauga Rattlesnake
Mammals
Franklin's Ground Squirrel
Species Moderately Associated with Oak Barrens
Birds
Northern Harrier
Upland Sandpiper
Black-billed Cuckoo
Whip-poor-will
Red-headed Woodpecker
Loggerhead Shrike
Field Sparrow
Grasshopper Sparrow
Western Meadowlark
Herptiles
Yellow-bellied Racer
Prairie Ringneck Snake
Western Ribbon Snake
Mammals
Northern Long-eared Bat
Eastern Red Bat
Prairie Vole
Gray Wolf

In order to provide a framework for decision-makers to set priorities for conservation actions, the species identified in Table 3-72 were subject to further analysis. The additional analysis identified the best opportunities, by Ecological Landscape, for protection, restoration, and/or management of both oak barrens and associated vertebrate Species of Greatest Conservation Need. The steps of this analysis were:

- Each species was examined relative to its probability of occurrence in each of the 16 Ecological Landscapes in Wisconsin. This information was then cross-referenced with the opportunity for protection, restoration, and/or management of oak barrens in each of the Ecological Landscapes (Tables 3-73 and 3-74).

- Using the analysis described above, a species was further selected if it had both a significant association with oak barrens and a high probability of occurring in an Ecological Landscape(s) that represents a major opportunity for protection, restoration and/or management of oak barrens. These species are shown in Figure 3-10.

Table 3-73. Vertebrate Species of Greatest Conservation Need that are (or historically were) *significantly* associated with oak barrens communities and their association with Ecological Landscapes that support oak barrens.

Oak Barrens	Birds (4)*				Herptiles (7)							Mammals (1)
Ecological Landscape grouped by opportunity for management, protection, and/or restoration of this community type	Sharp-tailed Grouse	Brown Thrasher	Vesper Sparrow	Lark Sparrow	Wood Turtle	Blanding's Turtle	Western Slender Glass Lizard	Northern Prairie Skink	Prairie Racerunner	Bullsnake	Eastern Massasauga Rattlesnake	Franklin's Ground Squirrel
MAJOR												
Central Sand Plains												
Western Coulee and Ridges												
IMPORTANT												
Central Sand Hills												

Color Key

- = **HIGH probability the species occurs in this Ecological Landscape**
- = **MODERATE probability the species occurs in this Ecological Landscape**
- = **LOW or NO probability the species occurs in this Ecological Landscape**

*** The number shown in parentheses is the number of Species of Greatest Conservation Need from a particular taxa group that are included in the table. Taxa groups that are not shown did not have any Species of Greatest Conservation Need that met the criteria necessary for inclusion in this table.**

Table 3-74. Vertebrate Species of Greatest Conservation Need that are (or historically were) *moderately* associated with oak barrens communities and their association with Ecological Landscapes that support oak barrens.

Oak Barrens	Birds (9)*									Herptiles (3)			Mammals (4)			
Ecological Landscape grouped by opportunity for management, protection, and/or restoration of this community type	Northern Harrier	Upland Sandpiper	Black-billed Cuckoo	Whip-poor-will	Red-headed Woodpecker	Loggerhead Shrike	Field Sparrow	Grasshopper Sparrow	Western Meadowlark	Yellow-bellied Racer	Prairie Ringneck Snake	Western Ribbon Snake	Northern Long-eared Bat	Eastern Red Bat	Prairie Vole	Gray Wolf
MAJOR																
Central Sand Plains																
Western Coulee and Ridges																
IMPORTANT																
Central Sand Hills																

Color Key

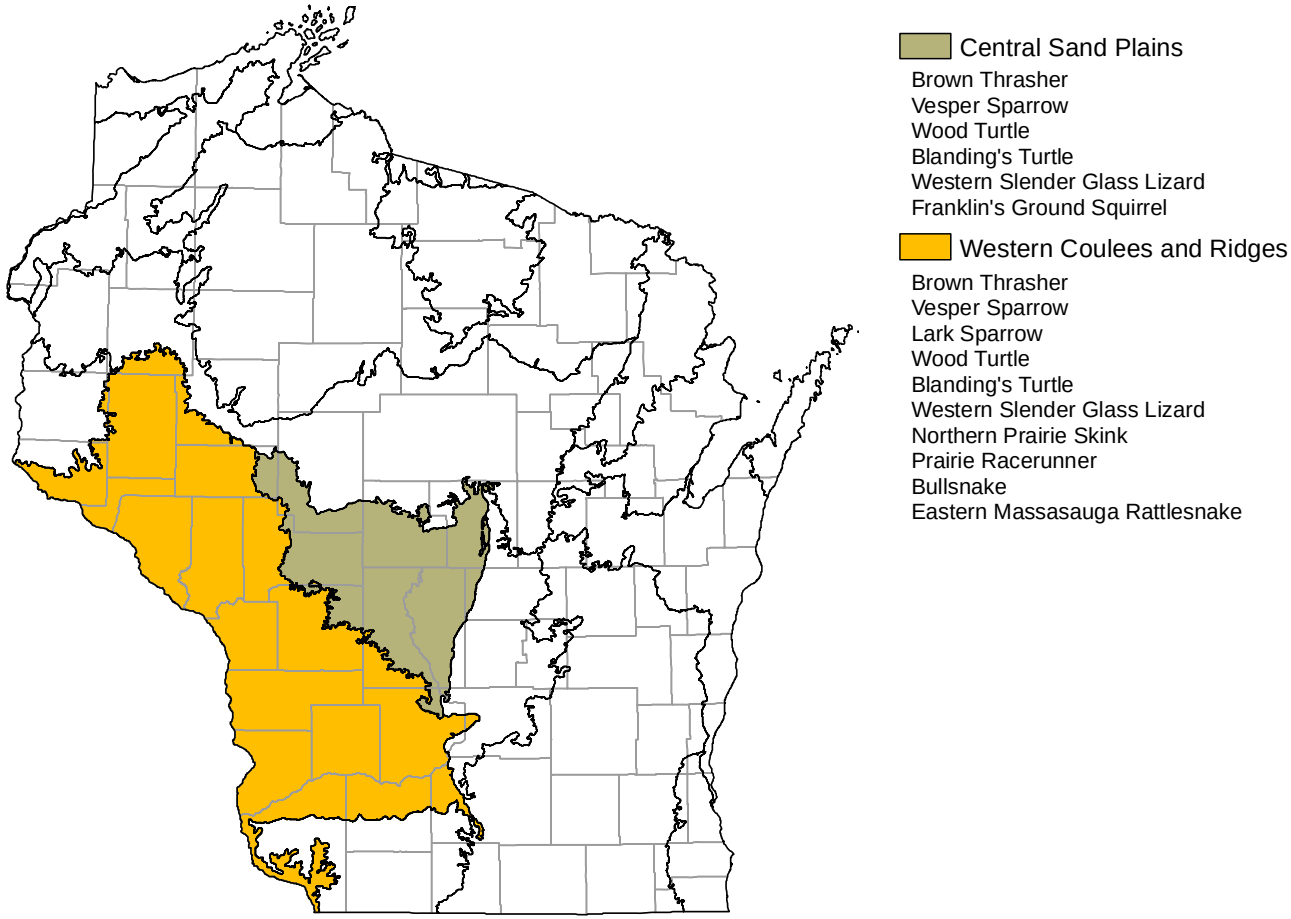
= **HIGH probability the species occurs in this Ecological Landscape**

= **MODERATE probability the species occurs in this Ecological Landscape**

= **LOW or NO probability the species occurs in this Ecological Landscape**

*** The number shown in parentheses is the number of Species of Greatest Conservation Need from a particular taxa group that are included in the table. Taxa groups that are not shown did not have any Species of Greatest Conservation Need that met the criteria necessary for inclusion in this table.**

Figure 3-10. Vertebrate Species of Greatest Conservation Need that have ***both* a significant association with oak barrens ***and*** a high probability of occurring in an Ecological Landscape(s) that represents a major opportunity for protection, restoration and/or management of oak barrens.**



3.3.2.2.3 Threats and Priority Conservation Actions for Oak Barrens

3.3.2.2.3.1 Statewide Overview of Threats and Priority Conservation Actions for Oak Barrens

The following list of threats and priority conservation actions were identified for oak barrens in Wisconsin. The threats and priority conservation actions described below apply to all of the Ecological Landscapes in Section 3.3.2.2.3.2 unless otherwise indicated.

Threats and Issues

- Some existing sites are small, overgrown with woody vegetation, and isolated. Small patch size may be a problem for some species; research is needed on the appropriate range of sizes needed to maintain all barrens species.
- Current composition and structure does not reflect the wide range of natural variability of this type.
- Lack of fire allows conversion to forest; too much burning may result in simplification and the elimination of some species.
- Invasive plants such as spotted knapweed and exotic spurges are an existing serious threat.
- Grazing by cattle and high deer densities can diminish or eliminate understory plants.
- Rural housing and exurban development fragments restorable stands, and makes the use of prescribed fire problematic.
- Conversion to pine plantations is a significant threat in some places. This trend may be exacerbated by objectives for removing oak stands of low economic value that are potentially threatened by gypsy moth outbreaks. Conflicts sometimes exist with forest or grassland objectives.
- Some areas that likely contain restorable sites have not been adequately inventoried (e.g. along the lower Black River).
- More information is needed to learn how to manage for the full range of natural variability associated with this community type.
- "Savannas", characterized by widely scattered large trees, are under-represented in our managed barrens.
- ATV's and other motorized vehicles can damage fragile soils, lead to erosion, and facilitate the spread of invasive plants. They can also directly damage or destroy sensitive vegetation.
- Dense sods of Pennsylvania sedge dominate the groundlayers of many former barrens sites from which fire has been excluded, and plant diversity in such sites is currently very low.

Priority Conservation Actions

- This complex of community types is globally rare. Long-term conservation will depend on a combination of protection and restoration, and Wisconsin has some of the best management opportunities in North America.
- Research on restoration techniques and their effectiveness is needed, and should be applied at appropriate sites.
- Identify additional locations where restorable sites exist. Limit additional development on and around restorable sites to increase management options.
- Active management is required to maintain the type. Develop a practical "toolkit" for maintaining the structure and composition characteristic of barrens ecosystems.
- Encourage use of prescribed fire to maintain this community, along with mechanical brushing and compatible forestry practices. Develop educational tools and demonstration areas that promote benefits of prescribed fire, and address the public's liability concerns. Follow existing WDNR screening guidance to minimize impacts on sensitive species.

- Where possible, manage this type in complexes with pine barrens, sand prairie, southern dry forest, bedrock glade, and surrogate grasslands to achieve economies of scale and better ensure that all phases of the community and its associated species are maintained over time. Use surrogate habitat following logging to buffer barrens openings, allow for species dispersal, and connect existing habitat. Manage this type as a moving mosaic of habitat, ensuring that habitat for the many species that require open conditions is not diminished or degraded.
- Reduce deer density.
- Restrict ATV use in sensitive areas.
- Continue and support research to find biocontrols for invasives. Control the spread of new invasives and attempt to identify populations of invasives when they are small and eliminate them.

3.3.2.2.3.2 Additional Considerations for Oak Barrens by Ecological Landscape

Special considerations have been identified for those Ecological Landscapes where major or important opportunities for protection, restoration, and/or management of oak barrens exist. Those considerations are described below and are in addition to the statewide threats and priority conservation actions for oak barrens found in Section 3.3.2.2.3.1.

Additional Considerations for Oak Barrens in Ecological Landscapes with ***Major*** Opportunities for Protection, Restoration, and/or Management

Central Sand Plains

The large public land base in the Central Sand Plains Ecological Landscape can be used to accomplish barrens restoration and management objectives. Opportunities to develop partnerships with private groups should be explored and fostered. Restoration and management efforts are underway at Necedah National Wildlife Refuge (Juneau County), Bauer-Brockway Barrens (Jackson County Forest), Quincy Bluff and Wetlands State Natural Area (Adams County), and Sandhill State Wildlife Area (Wood County). There are legitimate restoration opportunities on the Black River State Forest (Jackson County).

Western Coulees and Ridges

Excellent examples of oak barrens occur at Fort McCoy Military Reservation (Monroe County). There are some distinctive and important occurrences of barrens (that include jack pine) on the broad terraces bordering some of the major rivers in the Ecological Landscape, e.g., North Bend Bottoms State Wildlife Area (Jackson County), Trempealeau National Wildlife Refuge (Trempealeau County), and Nine Mile Island Savanna (Pepin County). Additional survey work is warranted on some of the major river terraces, especially the Black.

Additional Considerations for Oak Barrens in Ecological Landscapes with ***Important*** Opportunities for Protection, Restoration, and/or Management

Central Sand Hills

Oak barrens are not well represented in this Ecological Landscape, but there are good opportunities for restoration at small to medium scales. Opportunities occur at Rocky Run

Savanna State Natural Area (Columbia County) Lawrence Creek State Natural Area (Adams and Marquette Counties), and Emmons Creek State Fishery Area (Portage County).